

Int'l Appl. No. : PCT/GB2004/001123
Int'l filing date : March 17, 2004

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A system for pumping multiphase fluids, the system including comprising:
 - a phase separator that is connected to receive a LP multiphase fluid, and is constructed and arranged to separate a LP gas phase and a LP liquid phase from the LP multiphase fluid;
 - a gas-gas jet pump having a LP inlet connected to receive the LP gas phase from the phase separator, a HP inlet connected to receive a HP gas supply from a sustainable gas source, and an outlet for providing outlet gas at a pressure higher than that of the LP gas phase; and
 - and a liquid pump having a LP inlet connected to receive the LP liquid phase from the phase separator, and an outlet for providing outlet liquid at a pressure higher than that of the LP liquid phase;

□wherein the sustainable gas source has a pressure in the range 50-150 bar.
2. (Currently amended) A-The system according to claim 1, wherein the sustainable gas source comprises a supply of lift gas or export gas.
3. (Currently amended) A-The system according to claim 1, wherein the sustainable gas source comprises a supply of steam from geothermal wells.
4. (Currently amended) TheA system according to ~~any one of the preceding claims~~claim 1, wherein the sustainable gas source includes a compressor.
5. (Currently amended) TheA system according to ~~any one of the preceding claims~~claim 1, wherein the HP gas supply has a pressure at least twice that of the LP gas phase.
6. (Currently amended) TheA system according to ~~any one of the preceding claims~~claim 1, wherein the gas-gas jet pump has an outlet pressure in the range 1.1 to 3.0 times the pressure of the LP multiphase fluid.

Int'l Appl. No. : PCT/GB2004/001123
Int'l filing date : March 17, 2004

7. (Currently amended) The A system according to ~~any one of the preceding claims~~claim 1, wherein the liquid pump is a mechanical pump.
8. (Currently amended) The A system according to claim 7, wherein the liquid pump is a positive displacement pump.
9. (Currently amended) The A system according to claim 7 or claim 8, wherein the liquid pump has an outlet pressure in the range 1.1 to 3.0 times the pressure of the LP multiphase fluid similar to that of the gas-gas jet pump.
10. (Currently amended) The A system according to ~~any one of claims 1 to 6~~claim 1, wherein the liquid pump is a liquid-liquid jet pump having a LP inlet connected to receive the LP liquid phase from the phase separator, a HP inlet connected to receive a HP liquid supply from a sustainable liquid source, and an outlet for providing outlet liquid at a pressure higher than that of the LP liquid phase.
11. (Currently amended) The A system according to claim 10, wherein the sustainable liquid source comprises a supply of injection water.
12. (Currently amended) The A system according to claim 10, wherein the sustainable liquid source comprises a supply of export oil.
13. (Currently amended) The A system according to ~~any one of claims 10 to 12~~claim 10, wherein the sustainable liquid source has a pressure at least twice that of the LP liquid phase.
14. (Currently amended) The A system according to ~~any one claims 10 to 13~~claim 10, wherein the liquid-liquid jet pump has an outlet pressure in the range 1.1 to 3.0 times that of the LP liquid phase.
15. (Currently amended) The A system according to ~~any one of the preceding claims, including claim 1, further comprising~~ a knock-out vessel for removing retained liquid from the LP gas phase.

16. (Currently amended) The A system according to claim 15, wherein the knock-out vessel has a liquid outlet connected to deliver removed liquid to the liquid pump.
17. (Currently amended) The A system according to ~~any one of the preceding claims~~claim 1, wherein the separator is a cyclone type separator.
18. (Currently amended) The A system according to ~~any one of the preceding claims, including claim 1, further comprising~~ a mixing device connected to the outlets of the jet pump and the liquid pump, for combining the outlet gas and the outlet liquid and providing a combined multiphase outlet fluid at a pressure higher than that of the LP multiphase fluid.
19. (Currently amended) The A system according to claim 18, wherein the mixing device is a commingler.
20. (Currently amended) The A system according to claim 18 or claim 19, wherein the combined multiphase outlet fluid has an outlet pressure in the range 1.1 to 3.0 times that of the LP liquid phase.
21. (Currently amended) The A system according to ~~any one of claims 18 to 20~~claim 18, wherein the multiphase fluid is a petroleum gas/oil mixture.
22. (Currently amended) The A system according to claim 21, wherein the gas/liquid ratio of the petroleum gas/oil mixture is in the range 9 to 49 at the operating pressure and temperature.
23. (Currently amended) A process for pumping multiphase fluids, the process including comprising:
 - separating a LP multiphase fluid into a LP gas phase and a LP liquid phase;
 - increasing the pressure of the LP gas phase using a gas-gas jet pump, by supplying a HP gas supply from a sustainable gas source to a HP inlet of the jet pump and supplying the LP gas phase to a LP inlet of the jet pump; and

Int'l Appl. No. : PCT/GB2004/001123
Int'l filing date : March 17, 2004

- and increasing the pressure of the LP liquid phase using a liquid pump,
 - wherein the sustainable gas source has a pressure in the range 50-150 bar.
24. (Currently amended) TheA process according to claim 23, wherein the sustainable gas source comprises a supply of lift gas.
25. (Currently amended) TheA process according to claim 23, wherein the sustainable gas source comprises a supply of export gas.
26. (Currently amended) TheA process according to ~~any one of claims 23-25~~claim 23, wherein the sustainable gas source has a pressure at least twice that of the LP gas phase.
27. (Currently amended) TheA process according to ~~any one of claims 23-26~~claim 23, wherein the gas-gas jet pump has an outlet pressure in the range 1.1 to 3.0 times the pressure of the LP multiphase fluid.
28. (Currently amended) TheA process according to ~~any one of claims 23-27~~claim 23, wherein the liquid pump is a mechanical pump.
29. (Currently amended) TheA process according to claim 28, wherein the liquid pump has an outlet pressure in the range 1.1 to 3.0 times the pressure of the LP multiphase fluid.
30. (Currently amended) TheA process according to ~~any one of claims 23 to 27~~claim 23, wherein the liquid pump is a liquid-liquid jet pump having a LP inlet connected to receive the LP liquid phase, and a HP inlet connected to receive a HP liquid supply from a sustainable liquid source.
31. (Currently amended) TheA process according to claim 30, wherein the sustainable liquid source comprises a supply of injection water.
32. (Currently amended) TheA process according to claim 31, wherein the sustainable liquid source comprises a supply of export oil.

Int'l Appl. No. : PCT/GB2004/001123
Int'l filing date : March 17, 2004

33. (Currently amended) The A process according to any one of claims 23-32claim 23, wherein the sustainable liquid source has a pressure at least twice that of the LP multiphase fluid.
34. (Currently amended) The A process according to any one of claims 23-33claim 23, wherein the liquid-liquid jet pump has an outlet pressure in the range 1.1 to 3.0 times that of the LP multiphase fluid.
35. (Currently amended) The A process according to any one of claims 23-34claim 23, in which retained liquid is removed from the LP gas phase using a knock-out vessel.
36. (Currently amended) The A process according to claim 35, wherein removed liquid is delivered to the liquid pump.
37. (Currently amended) The A process according to any one of claims 23-36claim 23, wherein the LP gas and liquid phases are separated in a cyclone type separator.
38. (Currently amended) The A process according to any one of claims 23-37, including claim 23, further comprising mixing the increased pressure gas and liquid phases to provide a combined multiphase fluid at a pressure higher than that of the LP multiphase fluid.
39. (Currently amended) The A process according to claim 38, wherein increased pressure gas and liquid phases are mixed in a commingler.
40. (Currently amended) The A process according to any one of claims 38-39claim 38, wherein the combined multiphase outlet fluid has an outlet pressure in the range 1.1 to 3.0 times that of the LP multiphase fluid.
41. (Currently amended) The A process according to any one of claims 38-40claim 38, wherein the multiphase fluid is a petroleum gas/oil mixture.
42. (Currently amended) The A process according to claim 41, wherein the gas/liquid ratio of the petroleum gas/oil mixture is in the range 9 to 49 at the operating pressure and temperatures.